the modulated signal having symbols, each of which representing one of m signal points in a vector space diagram, where m is an integer number and the vector space diagram includes an I axis and a Q axis extending in directions perpendicular to each other,

said modulator operable to divide said m signal points into g signal point groups, assign the g values of the first data stream to the g signal point groups respectively, assign data of the second data stream to signal points of each of the g signal point groups, and select the signal points in the vector space diagram according to said input signal, so that:

signal points in each of said signal point groups are allocated in the vector space diagram at equal intervals, and

a distance in the vector space diagram between any closest two signal points of any adjacent two signal point groups is $2\delta \times n$, where n is a shift value which is more than 1 and 2δ represents a distance in the I axis or Q axis directions between any adjacent two signal points within any of the signal point groups.

39.   A signal receiving apparatus comprising:

- a demodulator operable to demodulate a received signal to obtain a reconstructed data,

said received signal having symbols, each of which representing one of m signal points in a vector space diagram, where m is an integer number and the vector space diagram includes an I axis and a Q axis extending in directions perpendicular to each other, the m signal points being divided into g signal point groups each containing m/g signal points, where g is an integer number, and

said reconstructed data containing a first data stream including g values of bit patterns which are assigned to the g signal point groups and a second data stream including m/g values of bit patterns which are assigned to the m/g signal points of each of the g signal point groups;

said demodulator being operable to reconstruct data of the second data stream corresponding to values of the m/g signal points in each of the g signal point groups and operable to reconstruct data of the first data stream corresponding to values of the g signal point groups; wherein:

signal points in each of said signal point groups are allocated in the vector space diagram at equal intervals; and

a distance in the vector space diagram between any closest two signal points of any adjacent two signal point groups is 2δ x n, where n is a shift value which is more than 1 and 2δ represents a distance in the I axis or Q axis directions between any adjacent two signal points within any of the signal point groups.

40. A signal transmission method comprising:

- modulating a carrier wave with an input signal to produce a modulated signal, and
- transmitting the modulated signal,

said input signal containing a first data stream including g values of bit patterns and a second data stream, where g is an integer number, and

the modulated signal having symbols, each of which is representing one of m signal points in a vector space diagram, where m is an integer number and the vector space diagram includes an I axis and a Q axis extending in directions perpendicular to each other,

said modulating including dividing said m signal points into g signal point groups, assigning the g values of the first data stream to the g signal point groups respectively, assigning data of the second data stream to signal points of each of the g signal point groups, selecting the signal points in the vector space diagram according to said input signal, so that:

signal points in each of said signal point groups are allocated in the vector space diagram at equal intervals,

a distance in the vector space diagram between any closest two signal points of any adjacent two signal point groups is 2δ x n, where n is a shift value which is more than 1 and 2δ represents a distance in the I axis or Q axis directions between any adjacent two signal points within any of the signal point groups.

41. A signal receiving method comprising:

- demodulating a received signal to obtain reconstructed data,

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said received signal having symbols, each of which is representing one of m signal points in a vector space diagram, where m is an integer number and the vector space diagram includes an I axis and a Q axis extending in directions perpendicular to each other, the m signal points being divided into g signal point groups each containing m/g signal points, where g is an integer number, and

said reconstructed data containing a first data stream including g values of bit patterns which are assigned to the g signal point groups and a second data stream including m/g values of bit patterns which are assigned to the m/g signal points of each of the g signal point groups;

said demodulating including reconstructing data of the second data stream corresponding to values of the m/g signal points in each of the g signal point groups and reconstructing data of the first data stream corresponding to values of the distinguished g signal point groups; wherein:

signal points in each of said signal point groups are allocated in the vector space diagram at equal intervals; and

a distance in the vector space diagram between any closest two signal points of any adjacent two signal point groups is 2δ x n, where n is a shift value which is more than 1 and 2δ represents a distance in the I axis or Q axis directions between any adjacent two signal points within any of the signal point groups.